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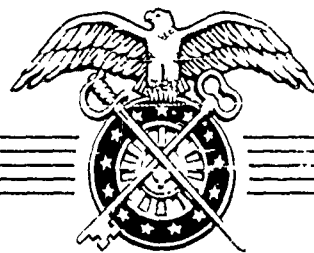
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HEADQUARTERS  
QUARTERMASTER RESEARCH & DEVELOPMENT COMMAND

TECHNICAL REPORT  
EP-37



COLOR REGIONS OF THE WORLD



QUARTERMASTER RESEARCH & DEVELOPMENT CENTER  
ENVIRONMENTAL PROTECTION RESEARCH DIVISION

NOVEMBER 1956

NATICK, MASSACHUSETTS

HEADQUARTERS QUARTERMASTER RESEARCH & DEVELOPMENT COMMAND  
OFFICE OF THE COMMANDING GENERAL  
NATICK, MASSACHUSETTS

27 November 1956


Major General Kester L. Hastings  
The Quartermaster General  
Washington 25, D. C.

Dear General Hastings:

This study, "Color Regions of the World," provides a generalized world-wide summary of the natural landscape colors occurring in each month. It will give Army planners and camouflagers a knowledge of the area, number, season, and duration of such colors. This information will assist planners in providing better camouflage protection to increase the efficiency of logistical operations in any area of the world in which United States troops are called upon to operate. In addition, this information can be used in operations where contrasting colors are required, as for leaflets for psychological warfare and markings for aircraft warnings.

Sincerely yours,

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C. G. CALLOWAY  
Brigadier General, USA  
Commanding

HEADQUARTERS QUARTERMASTER RESEARCH & DEVELOPMENT COMMAND  
Quartermaster Research & Development Center, US Army  
Natick, Massachusetts

ENVIRONMENTAL PROTECTION RESEARCH DIVISION

Technical Report  
EP-37

COLOR REGIONS OF THE WORLD

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REGIONAL ENVIRONMENTS RESEARCH BRANCH

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## Foreword

A knowledge of natural landscape colors is required for a successful camouflage program. The Quartermaster Corps is cooperating with the Corps of Engineers in an attempt to develop a generalized picture of colors throughout the world. Recently the Regional Environments Research Branch of the Environmental Protection Research Division completed a series of monthly color maps of the world at the request of the Camouflage Branch of the Engineer Research and Development Laboratories, Fort Belvoir, Virginia. The series of maps is being published separately in cooperation with the Corps of Engineers as a World Color Regions Atlas. The present report is an analysis of these maps, summarizing in tabular and textual form the information contained in the Color Atlas and explaining the basis on which the colors and regions were determined.

The aim of the Color Atlas and the present report which will accompany it is to indicate the month-by-month changes in terrain colors throughout the world. They provide a set of standard color bases that will conform to known logistical restrictions. Camouflage techniques will be applied to the standard color bases in order to improve concealment. The Color Atlas will provide camouflage research and development personnel with a ready terrain color guide, and those responsible for planning logistical support for military operations with a general terrain color reference. It is not designed to replace the operational planner, the camoufler, or the geographer, but rather to be a tool for their use.

AUSTIN HENSCHEL, Ph.D.  
Chief  
Environmental Protection Research  
Division

### Approved:

JAMES C. BRADFORD, Colonel, QMC  
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## Contents

	<u>Page</u>
Abstract	iv
1. Introduction	1
2. Methods	2
3. World Color Types	4
4. Coloration by Continental Areas	6
5. Maximum Areas of World Coloration by Color Types	8
6. Maximum Area of Coloration by Continental Areas	9
7. Summary	11
8. Acknowledgments	12
9. Bibliography	12
Appendixes	
A. World coloration tables: Average monthly distribution for each color type	14
B. World coloration tables: Average monthly distribution for each continental area	32
C. World coloration table: Maximum distri- bution for continental areas	41
D. World coloration tables: Average distri- bution for each of 12 months.	43
E. Urban areas of more than one million population	56
Distribution List	

## Abstract

The present five Quartermaster standard colors (white, tan, green, olive green, and olive drab) approximate the natural colors of about 86 percent of the world land area. For nearly complete world coverage three additional basic colors would be required: earth red, earth brown, and forest green.

Tan and green are the two principal color types in the world; tan has an average of 31 percent and green has an average of 27 percent of the total land area. White and partly white types average 18 percent of the total land area. Olive green averages 8 percent and olive drab 2 percent of the total land area. The three additional basic colors required for 100 percent coverage represent the following average percentages of total land area: earth red and earth brown, 6 percent each, and forest green 2 percent.

The present five standard Quartermaster colors provide the following percentage of coloration coverage by continents: Africa 100 percent, Asia 74 percent, Australasia 98 percent, Europe 93 percent, North America 84 percent, and South America 91 percent. Africa and Australasia appear as predominantly tan continents, Europe and South America predominantly green, and Asia and North America have a variety of coloration with no single color dominant.

## Color Regions of the World

### 1. Introduction

This report was prepared as a companion volume to the World Color Regions Atlas; the two publications together comprise the environmental portion of the Corps of Engineers' camouflage program. A general guide to the coloration of world landscapes is presented, to be used in planning color requirements for military operations. Whereas the World Color Regions Atlas shows the areal distribution of colors by months, the present report contains a quantitative summary of the areas and percentage of occurrence of colors.

This study is based upon the following three precepts: (1) terrain coloration in any given instance results from a combination of illumination, viewing conditions, and the blending of the characteristics of the various small elements taken as a whole, and as such has almost infinite variety; (2) the optimum camouflage color required in any instance is mostly governed by or is dependent upon the immediate terrain coloration; (3) terrains with similar characteristics and climatic conditions have similar colors regardless of their world geographical location.

It would at first appear from examination of the above precepts that determination of the total world coloration would result in an excessively large number of camouflage colors. However, field studies 4,5,8,12,13 have indicated that the number of satisfactory camouflage colors for troops can be reduced to relatively few.

Initially, in considering world terrain colorations, there seemed to be two basic approaches. The first was to determine those terrain factors which when combined would indicate a color condition, and then to determine the colors resulting from all possible combinations of these factors. This would permit, as a final step, delimitation of geographical areas for which these factors were determined. This approach permits not only a delineation of principal color types but indicates combinations which, if of sufficient magnitude, will demand consideration of an additional color; conversely, some color now believed important might prove to fit only small areas and therefore could be dropped. The second basic approach was to map the world distribution of those colors determined by field test, listing all of the known terrain types which would fit under each color category. This second method obviously lacks the versatility of the first, being limited by the extent of actual field observations, but has the virtue of immediate feasibility. In this study neither method was used exclusively; a combination of the two approaches was used.



It is believed that sufficient information has been obtained to permit delineation of a reasonably small number of colors that will fit into known logistical restrictions, and also provide a good color base which, if necessary, can be modified by the camoufler to meet local conditions or tactical situations.

## 2. Methods

A common base map of Bonne projection was selected and all source data and materials were placed on worksheets. The following equal-area base maps were then used over a light table in mapping the monthly coloration requirements for each of the continents. The scale of the worksheets of the various continental areas is as follows:

Africa	1: 8,450,000	Europe	1: 4,500,000
Asia	1: 11,200,000	N. America	1: 8,450,000
Australasia	1: 7,000,000	S. America	1: 7,700,000

The above continental maps include the following areal limits: Africa, including Madagascar; Asia, excluding islands south of the equator, but including the entire U.S.S.R.; Australasia, including New Zealand and islands north to the equator; Europe, including Iceland and Cyprus, but excluding the entire U.S.S.R.; North America, including Greenland and all Caribbean islands; South America. The principal reason for this areal grouping is one of convenience.

Following is an explanation of the color types mapped for the World Color Regions Atlas in their order of importance and with their broad meanings.

a. Cultural features whose unit-area is considered too small to map are indicated by a circle symbol which represents urban areas and industrial concentrations of more than one million population. These areas will normally require special camouflage consideration or no camouflage at all.

b. White areas are those totally under snow, white sand, or salt flats. The snow areas are determined by plotting the isopleth combining the 32°F mean monthly isotherm with the 0.75 inch mean monthly isohyet. For the periods when there is no snow cover, the background coloration is indicated by the dominant dormant vegetation color, or, in desert and barren areas, by the soil color.

c. Partly white areas are determined by using the 41°F mean monthly isotherm and the 1.05 inch mean monthly isohyet. For the periods when there is no snow cover, the background coloration is indicated by the dominant dormant vegetation color, or, in desert and barren areas, by the soil color.

d. The following agricultural types (according to Whittlesey<sup>6</sup>) are considered significant and dominant over natural conditions:

(1) Intensive subsistence tillage, plantation agriculture, crop farming, and commercial livestock raising are shown as Green, Munsell 5GY 4/5\*, during the growing season at mean monthly temperatures above 59°F. They are shown as Olive Green, Munsell 10 Y 3/3, at mean monthly temperatures from 41°F to 59°F, and as Tan, Munsell 7.5 YR 6/6, during the dormant and harvest seasons.

(2) Mediterranean agriculture is Olive Drab, Munsell 3Y 4/4, during the growing season and is Tan, Munsell 7.5 YR 6/6, during the dormant and harvest seasons.

e. The following desert types are considered significant and dominant over natural vegetation:

(1) Barren areas, bare rock, and shallow, high mountain soils are indicated by Earth Brown, Munsell 10 YR 3/2.

(2) Desert alluvial and sedimentary deposits, sand, and thin mountain soils are Tan, Munsell 7.5 YR 6/6.

(3) Mountain soils of desert highlands including chestnut, reddish chestnut, reddish brown, and lateritic soils, are indicated by Earth Red, Munsell 2.5 YR 4/6.

f. The following natural vegetation types are considered significant and dominant:

(1) Broadleaf evergreen trees are indicated by Green, Munsell 5 GY 4/5.

(2) Broadleaf deciduous trees, grass, and other herbaceous plants are indicated by Green, Munsell 5 GY 4/5, at temperatures at or above 59°F, Olive Green, Munsell 10 Y 3/3, at temperatures between 41°F and 59°F, and Tan, Munsell 7.5 YR 6/6, during the dormant or dry season.

(3) Needleleaf evergreen and needleleaf deciduous trees are indicated by Olive Green, Munsell 10 Y 3/3, during the growing season, and Earth Brown, Munsell 10 YR 3/2, during the dormant or dry season.

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\*The color nomenclature used is that of the standard Munsell system.

(4) Mixed forests of broadleaf deciduous and needleleaf evergreen trees are indicated by Forest Green, Munsell 7.5 GY 3/2, during the growing season and Olive Drab, Munsell 3 Y 4/4, during the dormant or dry season.

(5) Tundra is Olive Drab, Munsell 3 Y 4/4, during the growing season and Earth Brown, Munsell 10 YR 3/2, during the dormant or dry season.

Color studies for camouflage purposes have been made in various parts of the world by the Corps of Engineers to determine predominant colors of particular terrain types at various seasons and time of day. These studies were used as a basis for determining color correlations. However, many areas of the world have not been checked in the field, and secondary sources are necessarily used in order to provide a practical planning tool.

### 3. World Color Types

A statistical analysis of the color types follows, based on the tables appearing in the appendixes. For each color type in Table 18 the monthly percent of the world is given. Table 19 shows the average coloration by continents in terms of percentages within each continent.

a. White areas cover an average of  $7\frac{1}{2}$  million square miles (15 percent of the land surface- with the continent of Antarctica excluded) (Table 1). Nearly all of this area lies in the Northern Hemisphere; more than half of it is in Asia, and a third in North America.

There is maximum snow cover during the winter season in the Northern Hemisphere. In January (Tables 1 and 27)  $17\frac{1}{2}$  million square miles (35 percent of the world's land area) is predominantly white. Of this total area, more than  $10\frac{1}{2}$  million square miles of Asia and nearly  $5\frac{1}{2}$  million square miles of North America are covered with snow. By contrast, July and August (Tables 33 and 34) have only 1 million square miles of snow cover, and nearly all of this is found on the Greenland icecap.

In many areas of the Northern Hemisphere the snow cover is seasonal and often not dependable for the entire month. The background color types have been analyzed for all areas, excluding the permanent snow fields of the Greenland icecap. White areas with a tan background extend over nearly 3 million square miles (6 percent of the world land area) in January (Table 2). White areas with an earth red background extend over 1.8 million square miles (4 percent of the total land area) in January (Table 3). White areas with an earth brown background cover an area of nearly 11 million square miles (22 percent of the total land area) in January (Table 4). This type is more prevalent than all the other background types combined. White areas with an olive drab background extend over 1.8 million square miles (4 percent of the world land area) in January (Table 5).

b. Partly white areas cover an average of over  $1\frac{1}{2}$  million square miles (3 percent of the world land area) (Table 6). The maximum amount occurs during October before the winter snowfall completely covers the ground. During October (Table 36) there is a partial snow cover on over 3 million square miles (6 percent of the total land area). The background color type has been analyzed for the periods when snow does not cover the ground. Partly white areas with tan background comprise nearly 1 million square miles (2 percent of the world land area) during January (Table 7). Partly white areas with an earth red background include less than 60,000 square miles (less than 1 percent of the land area) during March (Tables 8 and 29). Partly white areas with an earth brown background comprise about 2.5 million square miles (5 percent of the world land area) during May (Tables 9 and 31). Partly white areas with an olive drab background reach a maximum of nearly 600,000 square miles (1 percent of the world land area) during November (Tables 10 and 37).

c. Tan areas, represented by Munsell 7.5 YR 6/6, extend over an average of nearly 16 million square miles (31 percent of the total land area) (Table 11). For the most part this is a desert or semiarid-type environment. Nearly half of the tan areas are in Africa and a fifth are in Asia. During the summer season in the Northern Hemisphere tan is the most prevalent color with about 17 million square miles (34 percent of the total land area). During the winter season over 14 million square miles (29 percent of the land) are tan. Thus, there is a variation of only about 3 million square miles from a maximum in summer to a minimum in winter.

d. Earth red areas, represented by Munsell 2.5 YR 4/6, comprise an average of 3 million square miles (6 percent of the total land area) (Table 12). This cold desert type is most extensive during the summer season in the Northern Hemisphere where it extends to nearly  $3\frac{1}{2}$  million square miles (7 percent of the total land area). During the winter season snow cover reduces the size of the area to  $1\frac{1}{2}$  million square miles (3 percent of the total land area). More than four-fifths of the cold desert areas of the world are in Central Asia.

e. Earth brown areas, represented by Munsell 10 YR 3/2, extend over an average of nearly  $2\frac{3}{4}$  million square miles (6 percent of the total land area) (Table 13). This type is most prevalent during May (Table 31) when earth brown areas occur over  $6\frac{1}{2}$  million square miles (13 percent of the total land area). Snow cover reduces the size of the earth brown areas during winter to nearly 700,000 square miles (1 percent of the total land area). Nearly 70 percent of this type occurs in Asia.

f. Green areas, represented by Munsell 5 GY 4/5, extend over an average of over 13.7 million square miles (27 percent of the total land area) (Table 14). During the growing season this type is most extensive, covering over  $16\frac{1}{4}$  million square miles (32 percent of the total land

area). During the winter or dormant season this type is reduced in area by more than 4 million square miles to a total of 12 million square miles (24 percent of the total land area).

g. Olive green areas, represented by Munsell 10 Y 4/4, comprise an average of almost 4.2 million square miles (8 percent of the total land area) (Table 15). This type is found almost exclusively in temperate areas of the Northern Hemisphere. It reaches a maximum during the month of August (Table 34) when there are 8.2 million square miles (16 percent of the total land area). During the winter season snow covers all but 1.2 million square miles (2 percent of the total land area).

h. Olive drab areas, represented by Munsell 3 Y 4/4, extend over an average of 1 million square miles (2 percent of the total land area) (Table 16). During spring and summer this type is most extensive, reaching a maximum during August when it covers 2.2 million square miles (4 percent of the total land area). Snow covers most of the area during the winter. Only 650,000 square miles (about 1 percent of the total land area) are olive drab during any one of the months of October through February.

i. Forest green areas, represented by Munsell 7.5 GY 3/2, comprise an average of 1 million square miles (2 percent of the world land area) (Table 17). During spring and summer this type covers more than 1½ million square miles (3 percent of the total land area) whereas during winter snow cover limits the area to 1/4 million square miles (less than 1 percent of the total land area).

j. Urban areas and industrial concentrations where more than a million persons are living and working within a very small unit-area require special camouflage consideration or no camouflage at all. There are 64 of these centers of population in the world (Appendix E). The following is a break-down by continental maps: Africa 1, Asia 21, Australasia 3, Europe 17, North America 17, and South America 5, or a world total of 64.

#### 4. Coloration by Continental Areas

In the analysis of color types by continents Table 19 shows the average coloration by percent of the continent, whereas Table 18 shows the color type by percent of the world land area.

a. Africa is predominantly a tan continent (Table 20), with nearly 50 percent of the world tan areas. In June (Table 32) the maximum tan

area of Africa is 72 percent, and in March the minimum area is 60 percent. Green is the second most prevalent color in Africa. The maximum green month is March with 38 percent of the continent, and the minimum is June with 28 percent. Third in importance in Africa is olive drab: November to April there is a maximum of 2 percent (Tables 30 through 37), while April, May, and October have 1 percent. During the remainder of the year the olive drab area is less than  $\frac{1}{2}$  of 1 percent (indicated on Tables in this report as T or a "trace").

b. Asia is a continent with a variety of coloration (Table 21). During January, 60 percent of Asia is snow covered. The snow-covered area is largest from September (Table 35) to June. Tan area is at a maximum in April with 25 percent, and at a minimum in July and August with 15 percent. Earth red area is at a maximum in May, June, and August with 16 percent and a minimum in January with 6 percent. Earth brown area is at a maximum in May with 25 percent and a minimum in January with 2 percent. Forest green is at a maximum in August with 4 percent. Olive green area is at a maximum in August with 27 percent, and a minimum in January, October, and December (Table 38) with 2 percent. Olive drab area is at a maximum in August with 5 percent, and a minimum in December with less than 1 percent.

c. Australasia, like Africa, is largely tan (Table 22), with 15 percent of the world tan areas. September has the maximum tan area with 76 percent, and February (Table 28) has the minimum area with 52 percent. As in Africa, green is the second most prevalent color. February has the maximum area with 46 percent, and September the minimum area with 16 percent. The third color type in Australasia is olive green with a maximum in June of 16 percent. Forest green area is 2 percent throughout the year.

d. Europe in winter is predominantly white with January having a maximum of 66 percent snow cover (Table 23). Europe in the summer is a predominantly green continent. However, it has only about 2 percent of the world green area, which is less than that of any other continent. July has the maximum green area with 46 percent. Southern Europe is predominantly tan during the summer season with August having a maximum tan area of 24 percent of the continent. Olive drab areas vary throughout the year from a maximum in March of 17 percent to a minimum in January, July, and August of 8 percent. Olive green areas are at a maximum in October with 52 percent, and at a minimum in January with 4 percent. Forest green areas are at a maximum in June with 13 percent. These areas are reduced by snow cover during the winter season.

e. North America, like Asia, is a continent with a variety of coloration (Table 24). Snow cover reaches a maximum during January (66 percent of the continent), and a minimum in July and August with only 2 percent. Partly snow-covered areas are at a maximum in October (16 percent). Tan area fluctuates between 10 and 16 percent. Earth red area varies between 1 and 4 percent. Earth brown area varies from 1 to 22 percent. Green areas are at a maximum in June with 25 percent, and a minimum from November to February with 5 percent. Olive green areas are at maximum in August and September with 26 percent, and a minimum in January and December with 7 percent. Olive drab areas are at a maximum in August with 13 percent.

f. South America is predominately a green continent (Table 25) with over a third of the world's green areas. March has the maximum, 64 percent of the continent, and July has the minimum, 48 percent. Tan is the second most prevalent color in South America. The maximum area occurs in July with 34 percent, and the minimum area in March with only 6 percent. All other colors together make up less than 12 percent during any one month.

##### 5. Maximum Areas of World Coloration by Color Types

In an analysis of all the monthly maps for a color type a maximum limit for each color type was found. Table 26 shows the area and percentage of the world land area for each color type.

a. White areas, represented by Munsell Neutral 9.5, when at a maximum comprise nearly 18 million square miles (35 percent of the land surface if the continent of Antarctica is excluded) (Table 26). Nearly all of this area lies in the Northern Hemisphere with 22 percent in Asia, 10 percent in North America, and 3 percent in Europe. Africa, Australasia, and South America have only small unit-areas of white.

b. Partly white areas cover a maximum of  $11\frac{1}{2}$  million square miles (23 percent of the world land area).

c. Tan areas extend over a maximum of 23.9 million square miles (48 percent of the total land area). This is distributed as follows: 22 percent in Africa, 11 percent in Asia, 5 percent each in Australasia and South America, 4 percent in North America, and only 1 percent in Europe.

d. Earth red areas are at a maximum with 4 million square miles (8 percent of the total land area). Nearly  $3\frac{1}{2}$  million square miles (7 percent) are in Asia, while slightly over  $\frac{1}{2}$  million square miles occur in North America and slightly less than  $\frac{1}{2}$  million square miles in South

America. There is only a trace in Africa, and none in Australasia and Europe.

e. Earth brown areas extend over a maximum area of 9 million square miles (19 percent of the total land area). This is distributed as follows: 13 percent in Asia, 5 percent in North America, 1 percent in South America, a trace in Australasia and Europe, and none in Africa.

f. Green areas extend over a maximum area of 23.8 million square miles (48 percent of the total land area). This is distributed as follows: 13 percent each in Africa and Asia, 11 percent in South America, 5 percent in North America, 4 percent in Australasia, and 2 percent in Europe.

g. Olive green areas cover a maximum of nearly 14 million square miles (27 percent of the total land area). This is distributed as follows: 14 percent in Asia, 8 percent in North America, 3 percent in Europe, 1 percent each in Australasia and South America, and a trace in Africa.

h. Olive drab areas extend over a maximum of 3½ million square miles (7 percent of the total land area). This is distributed as follows: 3 percent each in Asia and North America, 1 percent in Europe, a trace in Africa and South America, and none in Australasia.

i. Forest green areas cover a maximum of nearly 1.9 million square miles (4 percent of the total land area). This is distributed as follows: 2 percent in Asia, 1 percent each in Europe and North America, a trace in Australasia and South America, and none in Africa.

#### 6. Maximum Area of Coloration by Continental Areas

In the analysis of all the monthly maps for a color type a maximum limit for each color type was found by continent and percent of continent (Tables 20 through 25).

a. Africa is predominantly tan: 10½ million square miles (90 percent of the continent) is tan at some time of the year. Likewise, green areas extend over a maximum of 6.7 million square miles (58 percent of Africa). Olive drab areas cover a maximum of 200,000 square miles (2 percent of Africa). White, earth red, and olive green areas are limited to small areas. Partly white, earth brown, olive green, and forest green areas do not occur in Africa in unit-areas large enough to record.

b. Asia in the winter is predominantly white with a maximum area of over 11 million square miles (62 percent of the continent). Partly white areas extend over a maximum area of 5½ million square miles (32 percent of



the continent). Earth brown and green each covers a maximum area of nearly  $6\frac{1}{2}$  million square miles (37 and 36 percent of the continent, respectively). Tan extends over a maximum area of 5.7 million square miles (33 percent of the continent). Olive green occurs over a maximum area of nearly 7 million square miles (40 percent of Asia). Earth red extends over a maximum area of  $3\frac{1}{2}$  million square miles (20 percent of the continent). Olive drab covers a maximum area of 1.4 million square miles (8 percent of Asia). Forest green areas cover 800,000 square miles (5 percent of Asia).

c. Australasia, like Africa, is predominantly tan with a maximum area of  $2\frac{2}{3}$  million square miles (74 percent). Green extends over a maximum area of almost 1.9 million square miles (51 percent of the Australasian area). Olive green covers a maximum area of over 600,000 square miles (17 percent). Forest green areas cover a maximum area of 72,000 square miles (2 percent of the Australasian area). White, partly white, and earth brown areas are limited to a trace in land area. Earth red and olive drab do not occur in Australasia in unit-areas large enough to record.

d. Europe in winter is predominantly white with a maximum area of  $1\frac{1}{2}$  million square miles (67 percent of the continent). Partly white areas extend over a maximum of almost 1.8 million square miles (76 percent of the continent). Europe in summer is predominantly green, which extends over a maximum area of 1.2 million square miles (53 percent of the continent). Tan covers a maximum of 640,000 square miles (28 percent of the land area). Olive drab extends over a maximum area of nearly  $\frac{1}{2}$  million square miles (22 percent of the continent). Olive green has a maximum area of nearly  $1\frac{1}{2}$  million square miles (64 percent of the continent). Forest green covers a maximum area of approximately 300,000 square miles (13 percent of Europe). Earth brown extends over a maximum of 50,000 square miles (2 percent of the land area). Earth red does not occur in Europe in unit-areas large enough to record.

e. North America in winter is predominantly white with a maximum area of nearly 5 million square miles (59 percent of the continent). In addition, partly white areas cover a maximum of 4.1 million square miles (50 percent of the continent). Olive green covers a maximum area of over 4.2 million square miles (51 percent of the continent). Green extends over a maximum area of 2.2 million square miles (27 percent of the continent). Olive drab covers a maximum area of 1.5 million square miles (16 percent of North America). Tan extends over a maximum area of 1.6 million square miles (20 percent of the continent). Forest green covers a maximum area of 600,000 square miles (8 percent of the continent). Earth red occurs over a maximum area of 285,000 square miles (3 percent of the continent).

f. South America is predominately green with a maximum area of 5.4 million square miles (78 percent of the continent). Tan has 2.7 million

square miles (38 percent of the continent). Olive green extends over a maximum area of 600,000 square miles (9 percent of South America). Earth brown has a maximum area of  $\frac{1}{4}$  million square miles (4 percent of South America). Earth red has a maximum of 200,00 square miles (3 percent of the continent). White extends over a maximum area of 170,000 square miles (2 percent of the continent). Olive drab and forest green each occurs over a maximum area of 45,000 square miles (1 percent of the continent). Partly white does not occur in unit-areas large enough to record in South America.

g. Index to color change is provided by the total maximum area percentages for all colors for each continent. Europe has the most color change with a total of 325, followed by Asia with 273, and North America with 234. There is very little change in the other three continents: Africa totals 150, Australasia 144, and South America 136.

#### 7. Summary

What percent of the world is covered by the present five standard QM colors? White covers an annual average of 18 percent of the total world land area, which increases in winter to a maximum of 38 percent. Tan covers an average of 31 percent of the total land area which increases to a maximum of 34 percent. Green has an average of 27 percent of the total land area with a maximum of 32 percent. Olive green covers an average of 8 percent of the total land area with a maximum area of 16 percent. Olive drab covers an average of 2 percent of the total land area with a maximum area of 4 percent. Thus, in answer to the question, the present five standard QM colors cover 86 percent of the world land area.

Where is the coloration of the five standard QM colors most prevalent in the world, and where are non-standard colors present in significant amounts? Africa is 100 percent covered by the standard colors, whereas Asia is only 74 percent covered. In Asia the following non-standard colors are present: earth red, 14 percent; earth brown, 10 percent; and forest green, 2 percent. Australasia is 98 percent covered by standard colors, the remaining 2 percent is non-standard forest green. Europe is 93 percent covered by the standard colors; forest green comprises the remaining 7 percent. North America is 84 percent standard colors; the remaining areas include the following non-standard colors: earth brown, 8 percent; forest green, 5 percent; and earth red, 3 percent. South America is 91 percent standard colors and the remaining colors are non-standard earth brown and earth red, each 4 percent, and forest green, 1 percent.

How important are the non-standard colors? Earth red and earth brown areas each comprise 6 percent of the world land area, and forest green areas are 2 percent.

## 8. Acknowledgments

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## APPENDIX A

World Coloration: Average monthly distribution (area  
and percent) for each color type

<u>Color Type</u>	<u>Table</u>	<u>Page</u>
White	1	15
White with Tan background	2	16
White with Earth Red background	3	17
White with Earth Brown background	4	18
White with Olive Drab background	5	19
Partly white	6	20
Partly white with Tan background	7	21
Partly white with Earth Red background	8	22
Partly white with Earth Brown background	9	23
Partly white with Olive Drab background	10	24
Tan	11	25
Earth Red	12	26
Earth Brown	13	27
Green	14	28
Olive Green	15	29
Olive Drab	16	30
Forest Green	17	31

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN	5.4 T	10,540.6 60		1,527.4 9	5,488.2 31	6.7 F	17,568.3 36
FEB	3.6 T	9,667.1 59		1,313.3 8	5,283.0 33	6.7 T	16,273.7 32
MAR	.8 T	7,156.3 57		700.8 6	4,593.6 37	6.7 T	12,458.2 25
APR		2,993.5 51		230.7 4	2,671.2 45	16.1 F	5,911.5 12
MAY		387.0 41	3.0 F	20.8 2	500.4 53	32.2 4	943.4 2
JUN		70.5 35	4.9 3	4.2 2	35.0 18	83.2 42	198.8 T
JUL		17.6 15	11.8 10	2.1 2	7.2 6	77.7 67	116.4 T
AUG		17.6 12	4.7 3	2.1 2	55.8 39	61.9 44	142.1 T
SEP		792.4 64	1.2 T	7.8 1	397.8 32	32.3 3	1,231.5 2
OCT		3,839.1 58		141.8 2	2,615.4 40	14.8 T	6,611.1 13
NOV	.8 T	7,967.1 63		492.0 4	4,176.0 33	5.3 T	12,641.2 25
DEC	2.7 T	9,289.0 59		1,259.8 8	5,173.2 33	13.4 T	15,738.1 31
MEAN							7,486.9 15

Table 1. White Areas (in thousands of square miles), and percentages of World Totals

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN	4.5 T	1,707.8 58		512.2 18	705 6 24	5.4 T	2,935.5 6
FEB	3.0 T	1,503.2 59		433.8 17	594.0 24	5.4 T	2,539.4 5
MAR	.8 T	876.6 68		154.3 12	248.4 20	4.0 T	1,284.1 3
APR						4.0 100	4.0 T
MAY			1.3 25			4.0 75	5.3 T
JUN			3.4 100				3.4 T
JUL			6.6 84			1.3 16	7.9 T
AUG			3.0 100				3.0 T
SEP			1.2 31			2.7 69	3.9 T
OCT						5.4 100	5.4 T
NOV	.8 T	1,074.7 92		45.2 4	48.6 4	4.0 T	1,173.3 2
DEC	2.2 T	1,571... 63		396.9 16	509.4 21	5.4 T	2,485.3 5
Mean							870.8 2

Table 2. White Areas with Tan Background (in thousands of square miles), and Percentages of World Totals.

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
Jan	1,659.1	91			165.6	9	1,824.7 4
Feb	1,321.4	90			153.0	10	1,474.4 3
Mar	266.2	85			48.6	15	314.8 1
Apr	42.2	100					42.2 T
May	3.2	100					3.2 T
June						10.7 100	10.7 T
July						4.0 100	4.0 T
Aug						2.7 100	2.7 T
Sept							
Oct	16.2	T					16.2 T
Nov	509.7	98			10.8	2	520.5 1
Dec	1,142.3	87			174.6	13	1,317.4 3
MEAN							460.9 1

Table 3. White areas with Earth Red Background (in thousands of square miles), and Percentages of World Totals.



MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD				
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)				
JAN	.9	T 6,462.7	59	457.2	4	4,050.0	37	1.3	T 10,972.1	22	
FEB	.6	T 6,199.7	58	456.1	4	3,985.2	38	1.3	T 10,642.9	21	
MAR		5,620.6	57	376.6	4	3,801.6	39	2.7	T 9,801.5	19	
APR		2,951.3	50	220.3	4	2,671.2	46	8.1	T 5,850.9	12	
MAY		383.8	41	20.3	2	500.4	54	28.2	3	932.7	2
JUN		70.5	38	3.7	2	30.6	16	83.2	44	188.0	T
JUL		17.6	19	1.6	2			72.4	79	91.6	T
AUG		17.6	13	1.6	1	55.8	42	59.2	44	134.2	T
SEP		792.4	65	7.8	1	397.8	32	26.9	2	1,224.9	2
OCT		3,822.9	58	135.6	2	2,615.4	40	8.1	T	6,582.0	13
NOV		5,976.9	59	354.3	4	3,745.8	37	1.3	T	10,078.3	20
DEC	.5	T 5,880.0	57	457.2	5	3,951.0	38	2.7	T	10,291.4	20
Mean										5,565.8	11

Table 4. White Areas with Earth Brown Background (in thousands of square miles) and Percentages of World Totals

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN		711.0 39		558.0 30	567.0 31		1,836.0 4
FEB		642.8 40		423.4 26	550.8 34		1,617.0 3
MAR		392.9 37		169.9 16	495.0 47		1,057.8 2
APR				10.4 72		4.0 28	14.4 T
MAY			1.7 77	.5 23			2.2 T
JUN			1.5 20	.5 7	5.4 73		7.4 T
JUL			5.2 40	.5 4	7.2 56		12.9 T
AUG			1.7 77	.5 23			2.2 T
SEP						2.7 100	2.7 T
OCT				6.2 83		1.3 17	7.5 T
NOV		405.8 47		92.5 10	370.8 43		869.1 2
DEC		694.8 42		405.7 25	538.2 33		1,638.7 3
Mean							588.5 1

Table 5. White Areas with Olive Drab Background (in thousands of square miles), and Percentages of World Totals

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN	379.9	32	476.3	39	349.2	29	1,205.4 2
FEB	405.8	30	509.6	38	423.0	32	1,338.4 3
MAR	412.3	26	629.7	41	505.8	33	1,547.8 3
APR	811.7	42	309.1	16	802.8	42	1,923.6 4
MAY	1,399.3	65	147.0	7	601.2	28	2,148.0 4
JUN	175.3	43	1.0	T	232.0	57	408.3 1
JUL	71.4	70	19.2	19	10.8	11	101.4 T
AUG	42.2	9	1.2	T	408.6	91	452.0 1
SEP	1,600.5	65			858.6	35	2,459.1 5
OCT	1,555.1	51		221.3 7	1,290.6	42	3,067.0 6
NOV	464.2	22		914.3 44	702.0	34	2,080.5 4
DEC	314.9	21		588.1 39	610.2	40	1,513.2 3
Mean							1,522.4 3

Table 6. Partly White Areas (in thousands of square miles), and Percentages of World Totals;

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN		379.9 38		378.7 38	237.6 24		996.2 2
FEB		314.9 37		285.7 33	255.6 30		856.2 2
MAR		363.6 38		308.6 32	280.8 30		953.0 2
APR		269.5 65		27.0 6	120.6 29		417.1 1
MAY		19.5 100					19.5 T
JUN							
JUL			18.0 100				18.0 T
AUG							
SEP							
OCT		834.4 95			46.8 5		881.2 2
NOV		289.0 31		403.7 43	248.4 26		941.1 2
DEC		136.4 17		343.9 44	304.2 39		784.5 2
Mean							488.9 1

Table 7. Partly White Areas with Tan Background (in thousands of square miles), and Percentages of World Totals.

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN							
FEB		9.7	37		16.2	63	25.9 T
MAR					59.4	100	59.4 T
APR							
MAY							
JUN							
JUL							
AUG							
SEP							
OCT							
NOV		38.9	76		12.6	24	51.5 T
DEC		9.7	100				9.7 T
Mean							12.2 T

Table 8. Partly White Areas with Earth Red Background (in thousands of square miles), and Percentages of World Totals<sup>a</sup>

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN				41.0	50.4		91.4
FEB		26.0	16	40.5	91.8		158.3
MAR		19.5	9	86.8	113.4		219.7
APR		357.1	38	154.8	439.2		951.1
MAY		1,379.8	67	147.0	545.4		2,072.7
JUN		175.3	43		232.2		408.5
JUL		71.4	86		10.8		83.4
AUG		42.2	9		408.6		452.0
SEP		1,600.5	65		858.6		2,459.1
OCT		561.6	30	187.0	1,110.6		1,859.2
NOV		123.3	25	131.4	239.4		494.1
DEC		113.6	47	39.5	88.2		241.3
Mean							790.9

Table 9. Partly White Areas with Earth Brown Background (in thousands of square miles), and Percentages of World Totals.

MONTH	AFRICA (Area) (%)	ASIA (Area) (%)	AUSTRALASIA (Area) (%)	EUROPE (Area) (%)	N. AMERICA (Area) (%)	S. AMERICA (Area) (%)	WORLD (Area) (%)
JAN				56.6 48	61.2 52		117.8 T
FEB		55.2 18		183.4 62	59.4 20		298.0 1
MAR		29.2 9		234.3 74	52.2 17		315.7 1
APR		185.1 33		127.3 23	243.0 44		555.4 1
MAY					55.8 100		55.8 T
JUN							
JUL							
AUG							
SEP							
OCT		159.1 49		34.3 10	133.2 41		326.6 1
NOV		13.0 2		379.2 64	201.6 34		593.8 1
DEC		55.2 17		204.7 63	66.6 20		326.5 1
Mean							215.8 T

Table 10. Partly White Areas with Olive Drab Background (in thousands of square miles), and Percentages of World Totals.

MONTH	AFRICA		ASIA		AUSTRALASIA		EUROPE		N. AMERICA		S. AMERICA		WORLD	
	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)
JAN	7,568.1	51	3,719.1	25	1,923.4	13	15.6	T	1,123.2	7	597.8	4	14,947.2	30
FEB	7,495.0	51	3,592.2	25	1,902.2	13	22.4	T	1,107.0	8	494.5	3	14,613.3	29
MAR	6,967.3	48	3,877.8	27	1,964.7	14	23.9	T	1,180.8	8	438.3	3	14,452.8	29
APR	7,153.7	46	4,384.5	28	2,460.3	16	122.6	1	982.8	6	529.3	3	15,633.2	31
MAY	7,676.3	46	4,046.0	24	2,444.3	15	237.9	1	804.6	5	1,452.5	9	16,641.6	33
JUN	8,316.0	49	2,908.3	17	2,305.7	14	302.4	2	817.2	5	2,286.5	13	16,936.1	34
JUL	7,734.8	47	2,553.3	15	2,397.8	14.5	513.3	3	1,004.4	6	2,397.8	11.5	16,601.4	33
AUG	7,897.6	46	2,621.0	15	2,486.3	15	560.0	3	1,162.8	7	2,303.2	14	17,030.9	34
SEP	7,653.5	44	3,204.7	19	2,790.7	16	405.7	2	1,200.6	7	2,114.9	12	17,370.1	34
OCT	7,827.7	49	3,300.0	21	2,528.7	16	120.5	1	1,049.4	7	946.2	6	15,772.5	31
NOV	7,637.9	49	3,536.3	22	2,474.5	16	5.2	T	1,350.0	9	695.0	4	15,698.9	31
DEC	7,460.3	49	3,877.8	26	2,000.1	13	8.3	T	1,168.2	8	633.1	4	15,147.8	30
MEAN													15,903.8	31

Table 11. Tan Areas (in thousands of square miles), and percentages of World Totals



MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD			
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)			
JAN	23.2	2	1,110.4	74	109.8	7	250.5	17	1,493.9	3
FEE	23.2	1	1,716.0	81	118.8	6	250.5	12	2,108.5	4
MAR	23.2	1	2,573.4	85	169.2	6	250.5	8	3,016.3	6
APR	23.2	1	2,641.3	83	270.0	8	250.5	8	3,185.0	6
MAY	23.2	1	2,849.7	84	284.4	8	250.5	7	3,107.8	7
JUN	23.2	1	2,890.7	84	277.2	8	229.5	7	3,420.6	7
JUL	23.2	1	2,570.8	82	288.0	9	250.5	8	3,132.5	6
AUG	23.2	1	2,761.8	83	286.2	9	250.5	7	3,321.7	7
SEP	23.2	1	2,377.2	80	288.0	10	257.4	9	2,945.8	6
OCT	23.2	1	2,625.7	82	280.8	9	257.4	8	3,187.1	6
NOV	23.2	1	2,516.9	83	246.6	8	257.1	8	3,043.8	6
DEC	23.2	1	2,105.5	35	97.2	4	257.4	10	2,483.3	5
Mean									2,895.5	6

Table 12. Earth Red Areas (in thousands of square miles), and Percentages of World Totals.



MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN	3,808.1 31	787.7 6	1,660.8 13		439.2 4	5,688.6 46	12,384.4 25
FEB	3,902.0 31	893.9 7	1,678.4 13		445.8 3	5,781.8 46	12,671.9 25
MAR	4,456.9 32	1,291.0 9	1,599.1 12		529.2 4	5,809.8 43	13,686.0 27
APR	4,329.4 31	1,900.8 14	1,015.9 7		892.8 7	5,692.5 41	13,831.4 27
MAY	3,841.3 28	2,830.6 21	788.3 6	280.0 2	1,553.4 11	4,470.8 32	13,764.4 27
JUN	3,260.1 22	4,399.6 29	698.9 4	1,007.8 7	2,104.2 14	3,586.6 24	15,057.2 30
JUL	3,841.3 24	5,370.6 33	658.0 4	1,069.1 7	2,016.0 12	3,347.6 20	16,302.6 32
AUG	3,678.5 24	4,468.2 30	655.1 4	989.7 7	1,807.2 12	3,390.3 23	14,989.0 30
SEP	3,922.6 29	3,885.2 27	569.0 4	275.4 2	1,641.6 12	3,769.7 27	14,063.5 28
OCT	3,590.2 27	2,888.7 21	850.3 6		1,022.4 8	5,189.9 38	13,641.5 27
NOV	3,786.9 31	1,201.4 10	1,023.3 9		491.4 4	5,553.1 46	12,056.1 24
DEC	3,944.8 31	1,633.4 8	1,542.1 12		433.8 4	5,624.2 45	12,578.3 25
MEAN							13,752.1 27

Table 14. Green Areas (in thousands of square miles) and percentage of World Totals.

MONTH	AFRICA		ASIA		AUSTRALASIA		EUROPE		N. AMERICA		S. AMERICA		WORLD	
	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)
JAN	48.6	4	418.8	35	3.6	T	102.9	3	552.6	46	65.8	6	1,192.3	2
FEB	36.0	2	675.3	41	7.2	1	198.5	12	671.4	40	72.5	4	1,660.9	3
MAR			670.2	31	24.0	1	479.5	22	898.2	42	90.0	4	2,161.9	4
APR			747.8	21	111.6	3	1,150.3	34	1,368.0	39	103.5	3	3,511.2	7
MAY			1,116.3	24	384.0	8	1,067.6	22	1,830.6	39	351.0	7	4,749.5	5
JUNE			3,714.5	52	580.8	8	445.2	6	1,994.4	28	416.0	6	7,150.9	14
JULY			3,592.2	54	506.4	8	281.1	4	1,864.8	28	438.8	6	6,683.3	13
AUG			4,802.3	59	444.0	5	285.2	4	2,160.0	26	512.3	5	8,203.8	16
SEP			3,999.3	51	228.0	3	1,028.6	13	2,197.8	28	407.0	5	7,860.7	16
OCT			378.1	12	208.8	6	1,201.6	38	1,218.6	38	180.0	6	3,187.1	6
NOV			608.5	28	90.0	4	490.4	22	946.8	43	71.1	3	2,206.8	4
DEC	28.8	2	363.6	27	45.6	4	205.2	15	608.4	46	79.3	6	1,330.9	3
MEAN													4,158.3	8

Table 15. Olive Green Areas (in thousands of square miles) and Percentages of World Totals

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
JAN	169.1 23	317.3 44		190.7 26	54.0 7		731.1 1
FEB	162.7 25	167.6 25		261.8 40	63.0 10	2.8 T	657.9 1
MAR	174.3 18	317.2 32		391.2 39	102.6 10	13.9 1	999.2 2
APR	116.2 14	246.5 29		314.3 37	144.0 17	20.9 3	841.9 2
MAY	81.4 11	142.1 18		277.9 36	234.0 30	41.8 5	777.2 2
JUN	23.2 2	312.1 27		259.2 23	500.4 44	41.6 4	1,136.5 2
JUL	23.2 1	666.7 36		176.1 10	945.0 51	41.6 2	1,852.6 4
AUG	23.2 1	906.3 41		188.1 8	1,054.8 48	41.8 2	2,214.2 4
SEP	23.2 2	214.6 21		309.6 31	432.0 43	34.8 3	1,614.2 2
OCT	81.4 11	164.1 22		375.6 50	102.6 14	20.9 3	744.6 1
NOV	173.7 24	128.6 18		350.2 49	41.4 6	20.9 3	714.8 1
DEC	162.7 25	80.2 13		247.8 38	149.4 23	7.0 1	647.1 1
Mean							1,027.6 2

Table 16. Olive Drab Areas (in thousands of square miles), and Percentages of World Totals

MONTH	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD					
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)					
JAN	35.2	14	74.3	1.0	88.2	34	62.6	24	261.3	1		
FEB	32.9	12	74.3	26	97.2	35	76.6	27	281.0	1		
MAR	94.2	21	74.3	17	87.8	19	118.8	26	76.5	17	451.6	1
APR	219.9	26	74.3	9	146.5	18	316.8	38	76.6	9	834.1	2
MAY	439.8	29	73.2	5	279.0	19	640.8	42	76.6	5	1,509.4	3
JUN	352.6	25	72.0	5	286.8	20	648.0	45	76.4	5	1,435.8	3
JUL	493.1	32	70.1	4	264.4	17	676.8	43	55.6	4	1,560.0	3
AUG	598.1	36	72.0	4	267.0	16	655.2	40	55.8	4	1,648.1	3
SEP	475.5	31	73.2	5	265.0	18	628.2	42	62.6	4	1,504.5	3
OCT	285.7	26	74.3	7	249.4	22	441.0	39	62.6	6	1,113.0	2
NOV	110.4	26	74.3	17	61.8	15	115.2	27	62.6	15	424.3	1
DEC	50.6	18	74.3	26	4.7	2	99.0	35	55.7	19	284.3	1

Table 17. Forest Green Areas (in thousands of square miles), and Percentages of World Totals

## APPENDIX B

### World Coloration: Distribution (area and percent) for continental areas

	<u>Table</u>	<u>Page</u>
The World (average monthly distribution in percent)	18	33
The 6 Continents (average annual distribution)	19	34
Average monthly distribution for:		
Africa	20	35
Asia	21	36
Australasia	22	37
Europe	23	38
North America	24	39
South America	25	40

COLORATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
WHITE	36	32	25	12	2	T	T	T	2	13	25	31	15
PARTLY WHITE	2	3	3	4	4	1	T	1	5	6	4	3	3
TAN	30	29	29	31	33	34	33	34	34	31	31	30	31
EARTH RED	3	4	6	6	7	7	6	7	6	6	6	5	6
EARTH BROWN	1	2	3	10	13	9	8	5	4	6	3	2	6
GREEN	25	25	27	27	27	30	32	30	28	27	24	25	27
OLIVE GREEN	2	3	4	7	9	14	13	16	16	6	4	3	8
OLIVE DRAB	1	1	2	2	2	2	4	4	2	1	1	1	2
FOREST GREEN	1	1	1	2	3	3	3	3	3	2	1	1	2

Table 18. World Coloration Areas in Percent



COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA
	(Area) (%) (Area) (%)	(Area) (%) (Area) (%)	(Area) (%) (Area) (%)	(Area) (%) (Area) (%)	(Area) (%) (Area) (%)	(Area) (%) (Area) (%)
WHITE	1.3 T 5,273.8 24	2.6 T	570.3 21	3,099.8 32	36.2 T	
PARTLY WHITE	763.3 3	2.2 T	379.5 13	664.4 6		
TAN	9,138.9 66 4,162.1 20 2,764.9 63	233.8 9	1,295.1 13	1,489.9 18		
EARTH RED	27.8 T 2,873.9 14		271.6 3	301.2 4		
EARTH BROWN	2,168.3 10	2.4 T	8.7 T	843.3 8	343.0 4	
GREEN	4,646.2 33 3,095.1 15 1,273.9 29	362.2 13	1,334.7 13	5,790.5 70		
OLIVE GREEN	11.3 T 2,108.7 10 263.4 6	696.6 25	1,631.1 16	278.7 3		
OLIVE DRAB	121.4 1 366.3 2	334.3 12	382.3 4	28.8 T		
FOREST GREEN	318.8 2 88.1 2	191.3 7	452.5 5	80.0 1		

Table 19. Average Coloration by continents: Areas (in thousands of square miles), and Percentages

[NOTE: Percentages within each continent are given, not percentages of Total world area]

COLORATION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	5.4 T	3.6 T	.8 T			
TAN	7,568.1 65	7,495.0 64	6,967.3 60	7,153.7 62	7,676.6 66	8,316.0 72
EARTH RED	23.2 T	23.2 T	23.2 T	23.2 T	23.2 T	23.2 T
GREEN	3,808.1 33	3,702.0 34	4,456.9 38	4,329.4 37	3,841.3 33	3,260.1 28
OLIVE GREEN	48.6 T	36.0 T				
OLIVE DRAB	169.1 2	162.7 2	174.3 2	116.2 1	81.4 1	23.2 T

COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE					.8 T	2.7 T
TAN	7,734.8 67	7,897.6 68	7,653.5 66	7,827.7 67	7,637.9 66	7,460.3 64
EARTH RED	23.2 T	23.2 T	23.2 T	23.2 T	23.2 T	23.2 T
GREEN	3,841.3 33	3,678.5 32	3,922.6 34	3,690.2 32	3,786.9 32	3,944.8 34
OLIVE GREEN						28.8 T
OLIVE DRAB	23.2 T	23.2 T	23.2 T	81.4 1	173.7 2	162.7 2

Table 20. Africa Coloration by months: Areas (in thousands of square miles) and Percentages

COLOR 'ION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	10,540.6 60	9,024.3 55	7,156.3 40	2,993.5 17	389.0 2	70.5 T
PARTLY WHITE	379.9 2	405.8 2	412.3 2	811.7 5	1,399.3 8	175.3 1
TAN	3,719.1 21	3,592.2 20	3,877.8 22	4,384.5 25	4,046.0 23	2,908.3 17
EARTH RED	1,110.4 6	1,716.0 10	2,573.4 15	2,641.3 15	2,849.7 16	2,890.7 16
EARTH BROWN	299.6 2	457.8 3	1,216.2 7	3,662.6 21	4,397.8 25	2,785.0 16
GREEN	787.7 5	893.9 5	1,291.0 7	1,900.8 11	2,830.6 16	4,399.6 25
OLIVE GREEN	418.8 2	675.3 4	670.2 4	747.8 4	1,116.3 6	3,714.5 21
OLIVE DRAB	317.3 2	167.6 1	317.2 2	246.5 1	142.1 1	312.1 2
FOREST GREEN	35.2 T	32.9 T	94.2 1	219.9 1	439.8 3	352.6 2

COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	17.6 T	17.6 T	792.4 4	3,839.1 22	7,967.1 45	9,289.0 53
PARTLY WHITE	71.4 T	42.2 T	1,600.5 9	1,555.1 9	464.2 3	314.9 2
TAN	2,553.3 15	2,621.0 15	3,204.7 18	3,300.0 19	3,536.3 20	3,877.8 22
EARTH RED	2,570.8 15	2,761.8 16	2,377.2 14	2,625.7 15	2,516.9 14	2,105.5 12
EARTH BROWN	2,272.9 13	1,391.1 8	1,059.2 6	2,572.1 15	1,075.2 6	493.6 3
GREEN	5,370.6 30	4,468.2 25	3,885.2 22	2,888.7 16	1,201.4 7	1,033.4 6
OLIVE GREEN	3,592.2 20	4,802.3 27	3,999.3 23	378.1 2	608.5 3	363.6 2
OLIVE DRAB	666.7 4	906.3 5	214.6 1	164.1 1	128.6 1	80.2 T
FOREST GREEN	493.1 3	598.1 4	475.5 3	285.7 1	110.4 1	50.6 T

Table 21. Asia Coloration: Areas (in thousands of square miles) and Percentages

COLORATION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE						
PARTLY WHITE						
TAN	1,923.4 53	1,902.2 52	1,964.7 53	2,460.3 67	2,414.3 66	2,305.7 63
EARTH BROWN	2.4 T	2.4 T	2.4 T	2.4 T	1.2 T	1.2 T
GREEN	1,660.8 45	1,678.4 46	1,599.1 44	1,015.9 28	788.3 22	698.9 19
OLIVE GREEN	3.6 T	7.2 T	24.0 1	111.6 3	384.0 10	580.8 16
FOREST GREEN	74.3 2	74.3 2	74.3 2	74.3 2	73.2 2	72.0 2

37

COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	11.8 T	4.7 T	1.2 T			
PARTLY WHITE	19.2 1	1.2 T				
TAN	2,397.8 65	2,486.3 68	2,790.7 76	2,528.7 69	2,474.5 68	2,000.1 55
EARTH BROWN	1.2 T	1.2 T	2.4 T	2.4 T	2.4 T	2.4 T
GREEN	655.0 18	655.1 18	569.0 16	850.3 23	1,028.3 28	1,542.1 42
OLIVE GREEN	506.4 14	444.0 12	228.0 6	208.8 6	90.0 2	45.6 1
FOREST GREEN	70.1 2	72.0 2	73.2 2	74.3 2	74.3 2	74.3 2

Table 22. Australasia Coloration: Areas (in thousands of square miles) and Percentages

COLORATION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)
WHITE	1,527.4 66	1,313.3 57	700.8 30	230.7 10	20.8 1	4.2 T
PARTLY WHITE	476.3 21	509.6 22	629.7 27	309.1 14	147.0 7	
TAN	15.6 1	22.4 1	23.9 1	122.6 5	237.9 10	302.4 13
EARTH BROWN		8.3 T	1.0 T	10.4 T	3.7 T	8.3 T
GREEN						
OLIVE GREEN	102.9 4	198.5 9	479.5 21	1,180.3 51	280.0 12	1,007.8 44
OLIVE DRAB	190.7 8	261.8 11	391.2 17	314.2 14	1,067.6 46	445.2 19
FOREST GREEN	1.0 T		87.8 4	145.5 6	277.9 12	259.2 11
					279.0 12	286.8 13
COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)
WHITE	2.1 T	2.1 T	7.8 T	141.8 6	492.1 21	1,259.8 54
PARTLY WHITE				221.3 10	914.3 40	588.1 26
TAN	513.3 22	560.0 24	405.7 18	120.5 5	5.2 T	8.3 T
EARTH BROWN	7.8 T	21.8 1	21.8 1	3.7 T		
GREEN	1,069.1 46	989.7 43	275.4 12			
OLIVE GREEN	281.1 12	285.2 12	1,028.6 45	1,201.6 52	490.4 21	205.2 9
OLIVE DRAB	176.1 8	188.1 8	309.6 13	375.6 16	350.2 15	247.8 11
FOREST GREEN	264.4 12	267.0 12	265.0 11	249.4 11	61.8 3	4.7 T

Table 23. Europe Coloration: Areas (in thousands of square miles) and Percentages

COLORATION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	5,488.2 66	5,283.0 64	4,593.6 54	2,671.2 32	500.4 6	36.0 7
PARTLY WHITE	349.2 5	423.0 5	505.8 6	802.8 9	601.2 7	232.2 2
TAN	1,123.2 13	1,107.0 13	1,180.8 14	982.8 12	804.6 10	817.2 10
EARTH RED	109.8 1	118.8 1	169.2 2	270.0 3	284.4 3	277.2 3
EARTH BROWN	108.0 1	133.2 2	214.2 3	864.0 10	1,865.0 22	1,702.8 21
GREEN	439.2 5	415.8 5	529.2 6	892.8 11	1,553.4 19	2,104.2 25
OLIVE GREEN	542.6 7	671.4 8	898.2 11	1,368.0 17	1,830.6 22	1,994.4 24
OLIVE DRAB	54.0 1	63.0 1	102.6 1	144.0 2	234.0 3	500.4 5
FOREST GREEN	86.2 1	97.2 1	118.8 1	316.8 4	640.8 8	648.0 8

COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	7.2 7	55.8 7	397.8 6	2,615.4 31	4,176.0 51	5,173.2 62
PARTLY WHITE	10.8 7	408.6 5	858.6 10	1,290.6 16	702.0 8	459.0 6
TAN	1,004.4 12	1,162.8 14	1,200.6 14	1,049.4 13	1,350.0 16	1,168.2 14
EARTH RED	288.0 4	286.2 3	288.0 4	280.8 3	246.6 3	57.2 1
EARTH BROWN	1,499.4 18	721.8 9	667.8 8	291.6 4	243.0 3	124.2 2
GREEN	2,016.0 24	1,807.2 22	1,641.6 20	1,022.4 12	491.4 6	433.8 5
OLIVE GREEN	1,864.8 23	2,160.0 26	2,197.8 26	1,218.6 15	946.8 11	608.4 7
OLIVE DRAB	945.0 11	1,054.8 13	432.0 5	102.6 1	41.4 1	149.4 2
FOREST GREEN	676.8 8	655.2 8	628.2 8	441.0 5	115.2 1	99.0 1

Table 24. North America Coloration:  
Areas (in thousands of square miles) and Percentages

COLORATION	JAN	FEB	MAR	APR	MAY	JUN
	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)
WHITE	6.7 T	6.7 T	6.7 T	12.1 T	32.2 T	93.9 1
TAN	597.8 8	494.5 7	438.3 6	529.3 8	1,462.5 21	2,286.5 33
EARTH RED	250.5 4	250.5 4	250.5 4	250.5 4	250.5 4	229.5 3
EARTH BROWN	285.0 4	271.6 4	271.6 4	271.6 4	271.6 4	222.5 3
GREEN	5,688.6 82	5,781.8 83	5,809.8 84	5,692.5 82	4,470.8 64	3,586.6 52
OLIVE GREEN	65.8 1	72.5 1	90.0 1	103.5 1	351.0 5	416.0 6
OLIVE DRAB		2.8 T	13.9 T	20.9 T	41.8 1	41.6 1
FOREST GREEN	62.6 1	76.6 1	76.5 1	78.6 1	76.6 1	76.4 1

COLORATION	JUL	AUG	SEP	OCT	NOV	DEC
	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)	(Area) (\$)
WHITE	77.7 1	61.9 1	32.3 T	14.8 T	5.3 T	8.1 T
TAN	2,397.8 34	2,303.2 33	2,114.9 30	946.2 14	695.0 10	633.1 9
EARTH RED	250.5 4	250.5 3	257.4 4	257.4 4	257.1 4	257.4 4
EARTH BROWN	347.4 5	341.2 5	278.3 4	285.2 4	291.9 4	292.2 4
GREEN	3,347.6 48	3,390.3 49	3,769.7 54	5,189.9 75	5,553.1 80	5,624.2 81
OLIVE GREEN	438.8 6	512.3 7	407.0 6	180.0 2	71.1 1	79.3 1
OLIVE DRAB	41.6 1	41.8 1	34.8 1	20.9 T	20.9 T	7.0 T
FOREST GREEN	55.6 1	55.8 1	62.6 1	62.6 1	62.6 1	55.7 1

Table 25. South America Coloration:  
Areas (in thousands of square miles) and Percentages

## APPENDIX C

	<u>Table</u>	<u>Page</u>
World Coloration: Maximum Distribution (area and percent) for continental areas	26	42



COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD							
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)							
WHITE	5.4 T	11,003.1	22	13.2 T	1,548.6	3	4,928.4	10	170.6 T	17,669.3	35			
PARTLY WHITE		5,584.3	11	20.4 T	1,761.7	4	4,140.0	8		11,506.4	23			
TAN	10,479.6	22	5,743.4	11	2,695.2	5	640.0	1	1,639.8	4	2,679.9	5	23,877.9	48
EARTH RED	21.6 T	3,470.7	7						288.0	1	225.7 T	4,006.0	8	
EARTH BROWN		6,483.7	13	2.4 T	49.9 T	2,640.6	5	251.2	1	9,426.6	19			
GREEN	6,737.4	13	6,311.6	13	1,852.8	4	1,227.6	2	2,255.4	5	5,437.7	11	23,822.5	48
OLIVE GREEN	50.4 T	6,957.7	14	610.8	1	1,484.2	3	4,226.4	8	635.4	1	13,964.9	27	
OLIVE DRAB	210.6 T	1,357.1	3			520.0	1	1,369.8	3	45.7 T	3,503.2	7		
FOREST GREEN		801.9	2	72.0 T	292.0	1	671.4	1	40.3 T	1,877.6	4			

Table 26. Maximum World Coloration: Areas (in thousands of square miles) and Percentages (based on one or more months)

[Note: Percentages of world area (not of each continent) are given]

## APPENDIX D

World Coloration: Average distribution (area and percent)  
for each of 12 months

<u>Month</u>	<u>Table</u>	<u>Page</u>
January	27	44
February	28	45
March	29	46
April	30	47
May	31	48
June	32	49
July	33	50
August	34	51
September	35	52
October	36	53
November	37	54
December	38	55

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	5.4	T 10,540.6 60		1,527.4 66	5,488.2 66	6.7	T 17,568.3 36
PARTLY WHITE		379.9 2		476.3 21	349.2 5		1,205.4 2
TAN	7,568.1 65	3,719.1 21	1,923.4 53	15.6 1	1,123.2 13	597.8	8 14,947.2 30
EARTH RED	23.2	T 1,110.4 6			109.8 1	250.5	4 1,493.9 3
EARTH BROWN		299.6 2	2.4	T	108.0 1	285.0	4 695.0 1
GREEN	3,808.1 33	787.7 5	1,660.8 45		439.2 5	5,688.6	82 12,384.4 25
OLIVE GREEN	48.6	T 418.8 2	3.6	T 102.9 4	552.6 7	65.8	1 1,192.3 2
OLIVE DRAB	169.1 2	317.3 2		190.7 8	54.0 1		731.1 1
FOREST GREEN		35.2	T 74.3 2	1.0	T 88.2 1	62.6	1 261.3
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 27. Coloration for January: Area (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	3.6 T	9,667.1 55		1,313.3 57	5,283.0 64	5.7 T	16,273.7 32
PARTLY WHITE		405.8 2		509.6 22	423.0 5		1,338.4 3
TAN	7,495.0 64	3,592.2 20	1,902.2 52	22.4 1	1,107.0 13	494.5 7	14,613.3 29
EARTH RED	23.2 T	1,716.0 10			118.8 1	250.5 4	2,108.5 4
EARTH BROWN		457.8 3	2.4 T	8.3 T	133.2 2	271.6 4	873.3 2
GREEN	3,902.0 34	893.9 5	1,678.4 46		415.8 5	5,781.8 83	12,671.9 25
OLIVE GREEN	36.0 T	675.3 4	7.2 T	198.5 9	671.4 8		1,660.9 3
OLIVE DRAB	162.7 2	167.6 1		261.8 11	63.0 1		657.9 1
FOREST GREEN		32.9 T	74.3 2		97.2 1		281.0 1
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 28. Coloration for February (in thousands of square miles) and Percentages

COLORATION	AFRICA		ASIA		AUSTRALASIA		EUROPE		N. AMERICA		S. AMERICA		WORLD		
	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	(Area)	(%)	
WHITE	.8	T	7,156.3	40			700.8	30	4,593.6	56	6.7	T	12,458.2	25	
PARTLY WHITE			412.3	2			629.7	27	507.0	6			1,547.8	3	
TAN	6,967.3	60	3,877	9	22	1,599.1	53	23.9	1	1,180.8	14	438.3	6	14,452.8	29
EARTH RED	23.2	T	2,573.4	15					169.2	2	250.5	4	3,016.3	3	
EARTH BROWN			1,216.2	7	2.4	T	1.0	T	214.2	3	271.3	4	1,705.1	3	
GREEN	4,456.9	38	1,291.0	7	1,599.1	44			529.2	6	5,809.8	84	13,686.0	27	
OLIVE GREEN			670.2	4	24.0	1	479.5	21	898.2	11	90.0	1	2,161.9	4	
OLIVE DRAB	174.3	2	317.2	2			391.2	17	102.6	1	13.9	T	999.2	2	
FOREST GREEN			94.2	1	74.3	2	87.8	4	118.8	1	76.5	1	451.6	1	
TOTAL	11,622.5	100	47,608.6	100	3,644.5	100	2,313.9	100	8,312.4	100	6,957.0	100	50,478.9	100	

Table 29. Coloration for March (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE		2,993.5 17		230.7 10	2,671.2 32	12.1 T	5,907.5 12
PARTLY WHITE		811.7 5		309.1 14	802.8 9		1,923.6 4
TAN	7,152.7 62	4,384.5 25	2,460.3 67	122.6 5	982.8 12	529.3 8	15,633.2 31
EARTH RED	23.2 T	2,641.3 15			270.0 3	250.5 4	3,185.0 6
EARTH BROWN		3,662.6 21	2.4 T	10.4 T	864.0 11	271.6 4	4,811.0 9
GREEN	4,329.4 37	1,900.8 11	1,015.9 28		892.8 11	5,692.5 82	13,831.4 27
OLIVE GREEN		747.8 4	111.6 3	1,180.3 51	1,368.0 17	103.5 1	3,511.2 7
OLIVE DRAB	116.2 1	246.5 1		314.3 14	111.0 2	20.9 T	841.9 2
FOREST GREEN		219.9 1	74.3 2	116.5 6	316.8 4	76.6 1	834.1 2
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	7,312.4 100	6,957.0 100	50,478.9 100

Table 30. Coloration for April (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD							
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)							
WHITE		387.0	2	3.0	T	20.8	1	500.4	6	32.2	T	943.4	2	
PARTLY WHITE		1,399.3	8	.5	T	147.0	7	601.2	7			2,148.0	4	
TAN	7,676.6	66	4,046.0	23	2,414.3	66	237.9	10	804.6	10	1,462.5	21	16,641.9	33
EARTH RED	23.2	T	2,849.7	16					284.4	3	250.5	4	3,407.8	7
EARTH BROWN		4,397.8	25	1.2	T		3.7	T	1,863.0	22	271.6	4	6,537.3	13
GREEN	3,841.3	33	2,830.6	16	788.3	22	280.0	12	1,553.4	19	4,470.8	64	13,764.4	27
OLIVE GREEN		1,116.3	6	384.0	10	1,067.6	46	1,830.6	22	351.0	5	4,749.5	9	
OLIVE DRAB	81.4	1	142.1	1			277.9	12	234.0	3	41.8	1	777.2	2
FOREST GREEN		439.8	3	73.2	2	279.0	12	640.8	8	76.6	1	1,509.4	3	
TOTAL	11,622.5	100	17,608.6	100	3,664.5	100	2,313.9	100	8,312.4	100	6,957.0	100	50,478.9	100

Table 31. Coloration for May (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE		70.5 T	4.9 T	4.2 T	36.0 T	97.9 1	213.5 T
PARTLY WHITE		175.3 1	1.0 T		232.2 3		408.5 1
TAN	8,316.0 72	2,908.3 17	2,305.7 63	302.4 13	817.2 10	2,286.5 33	16,936.1 34
EARTH RED	23.2 T	2,890.7 16			277.2 3	229.5 3	3,420.6 7
EARTH BROWN		2,785.0 16	1.2 T	8.3 T	1,702.8 21	222.5 3	4,719.8 9
GREEN	3,260.1 28	4,399.6 25	698.9 19	1,007.8 44	2,104.2 25	3,586.6 52	15,057.2 30
OLIVE GREEN		3,714.5 21	580.8 16	445.2 19	1,994.4 24	416.0 6	7,150.9 14
OLIVE DRAB	23.2 T	312.1 2		259.2 11	500.4 6	41.6 1	1,136.5 2
FOREST GREEN		352.6 2	72.0 2	286.8 13	648.0 8	76.4 1	1,435.8 3
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 32. Coloration for June (in thousands of square miles) and Percentages



COLORATION	AFRICA (Area) (%)	ASIA (Area) (%)	AUSTRALASIA (Area) (%)	EUROPE (Area) (%)	N. AMERICA (Area) (%)	S. AMERICA (Area) (%)	WORLD (Area) (%)
WHITE		17.6 T	11.8 T	2.1 T	7.2 T	77.7 1	116.4 T
PARTLY WHITE		71.4 T	1.2 T		10.8 T		101.4 T
TAN	7,734.8 67	2,553.3 15	2,397.8 65	513.3 22	1,004.4 12	2,397.8 34	16,302.6 33
EARTH RED	23.2 T	2,570.8 15			288.0 4	250.5 4	3,132.5 6
EARTH BROWN		2,272.9 13	1.2 T	7.8 T	1,499.4 18	347.4 5	4,128.7 8
GREEN	3,841.3 33	5,370.6 30	658.0 18	1,069.1 46	2,016.0 24	3,347.6 48	16,302.6 33
OLIVE GREEN		3,592.2 20	506.4 14	281.1 12	1,864.8 23	438.8 6	6,683.3 13
OLIVE DRAB	23.2 T	666.7 4		176.1 8	945.0 11	41.6 1	1,852.6 4
FOREST GREEN		493.1 3	70.1 2	264.4 12	676.8 8	55.6 1	1,560.0 3
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 33. Coloration for July (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE		17.6 T	4.7 T	2.1 T	55.8 T	61.9 1	142.1 T
PARTLY WHITE		42.2 T	1.2 T		408.6 5		452.0 1
TAN	7,397.6 68	2,621.0 15	2,486.3 68	560.0 24	1,162.8 14	2,303.2 33	17,030.9 34
EARTH RED	23.2 T	2,761.8 16			286.2 3	250.5 3	3,321.7 7
EARTH BROWN		1,391.1 8	1.2 T	21.8 1	721.8 9	342.2 5	2,477.1 5
GREEN	3,678.5 32	4,468.2 25	655.1 18	989.7 43	1,807.2 22	3,390.3 49	14,989.0 30
OLIVE GREEN		4,802.3 27	444.0 12	285.2 12	2,160.0 26	112.3 7	8,203.8 16
OLIVE DRAB	23.2 T	906.3 5		188.1 8	1,054.8 13	41.8 1	2,214.2 4
FOREST GREEN		598.1 4	72.0 2	267.0 12	655.2 8	55.8 1	1,648.1 3
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 34. Coloration for August (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE		792.4 4	1.2 T	7.8 T	397.8 5	32.3 T	1,231.5 2
PARTLY WHITE		1,600.5 9			858.6 10		2,459.1 5
TAN	7,653.5 66	3,204.7 18	2,790.7 76	405.7 18	1,200.6 14	2,114.9 30	17,370.1 34
EARTH RED	23.2 T	2,377.2 14			288.0 4	257.4 4	2,945.8 6
EARTH BROWN		1,059.2 6	2.4 T	21.8 1	667.8 8	278.3 4	2,029.5 4
GREEN	3,922.6 34	3,885.2 22	569.0 16	275.4 12	1,641.6 20	3,759.7 54	14,063.5 28
OLIVE GREEN		3,999.3 23	228.0 6	1,028.6 45	2,197.8 26	407.0 6	7,860.7 16
OLIVE DRAB	23.2 T	214.6 1		309.6 13	432.0 5	34.8 1	1,014.2 2
FOREST GREEN		475.5 3	73.2 2	265.0 11	628.2 8	6.6 1	1,504.5 3
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 35. Coloration for September (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE		3,839.1 22		141.8 6	2,615.4 31	14.8 T	6,611.1 13
PARTLY WHITE		1,463.1 9		221.3 10	1,290.6 15		3,067.0 7
TAN	7,827.7 67	3,300.0 19	2,528.7 69	120.5 5	1,049.4 13	946.2 14	15,772.5 31
EARTH RED	23.2 T	2,625.7 15			280.8 3	257.4 4	3,187.1 6
EARTH BROWN		2,572.1 15	2.4 T	3.7 T	291.6 4	285.2 4	3,155.0 6
GREEN	3,690.2 32	2,888.7 16	850.3 23		1,022.4 12	5,189.9 75	13,641.5 27
OLIVE GREEN		378.1 2	208.8 6	1,201.6 52	1,218.6 15	180.0 2	3,187.1 6
OLIVE DRAE	81.4 1	164.1 1		375.6 16	102.6 1	20.9 T	744.6 2
FOREST GREEN		285.7 1	74.3 2	249.4 11	441.0 5	62.6 1	1,113.0 6
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 36. Coloration for October (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	.8 T	7,967.1 45		492.0 21	4,176.0 51	5.3 T	12,641.2 25
PARTLY WHITE		464.2 3		914.3 40	702.0 8		2,080.5 4
TAN	7,637.9 66	3,536.3 20	2,474.5 68	5.2 T	1,350.0 16	695.0 10	15,698.9 31
EARTH RED	23.2 T	2,516.9 14			246.6 3	257.1 4	3,043.8 6
EARTH BROWN		1,075.2 6	2.4 T		243.0 3	291.9 4	1,612.5 3
GREEN	3,786.9 32	1,201.4 7	1,023.3 28		491.4 6	5,553.1 80	12,056.1 24
OLIVE GREEN		608.5 3	90.0 2	490.4 21	946.8 11	71.1 1	2,206.8 4
OLIVE DRAB	173.7 2	128.6 1		350.2 15	41.4 1	20.9 T	714.8 2
FOREST GREEN		110.4 1	74.3 2	61.8 3	115.2 1	62.6 1	424.3 1
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 37. Coloration for November (in thousands of square miles) and Percentages

COLORATION	AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA	WORLD
	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)	(Area) (%)
WHITE	2.7 T	9,289.0 53		1,259.8 54	5,173.2 62	8.1 T	15,732.8 31
PARTLY WHITE		314.9 2		588.1 26	459.0 6		1,362.0 2
TAN	7,460.3 64	3,877.8 22	2,000.1 55	8.3 T	1,168.2 14	633.1 9	15,147.8 30
EARTH -ED	23.2 T	2,105.5 12			97.2 1	257.4 4	2,483.3 5
EARTH BROWN		493.6 3	2.4 T		124.2 2	292.2 4	912.4 2
GREEN	3,944.8 34	1,033.4 6	1,542.1 42	205.2 9	433.8 5	5,624.2 81	12,578.3 25
OLIVE GREEN	28.8 T	363.6 2	45.6 1	205.2 9	608.4 7	79.3 1	1,330.9 3
OLIVE DRAB	162.7 2	80.2 T		247.8 11	149.4 2	7.0 T	647.1 1
FOREST GREEN		50.6 T	74.3 2	4.7 T	99.0 1	55.7 1	284.3 1
TOTAL	11,622.5 100	17,608.6 100	3,664.5 100	2,313.9 100	8,312.4 100	6,957.0 100	50,478.9 100

Table 33. Coloration for December (in thousands of square miles) and Percentages

## APPENDIX E

Urban areas of more than one million population

### Africa

Cairo, Egypt

### Asia

Bombay, India  
Calcutta, India  
Canton, China  
Hong Kong  
Hyderabad, India  
Karachi, Pakistan  
Kyoto, Japan  
\*Leningrad, U.S.S.R.  
Madras, India  
Manila, Philippines  
\*Moscow, U.S.S.R.  
Mukden, China  
Nagoya, Japan  
Nanking, China  
Osaka, Japan  
Peiping, China  
Seoul, Korea  
Shanghai, China  
Tehran, Iran  
Tientsin, China  
Tokyo, Japan

### Australasia

\*\*Jakarta, Indonesia  
Melbourne, Australia  
Sydney, Australia

### Europe

Barcelona, Spain  
Berlin, Germany  
Birmingham, England  
Brussels, Belgium  
Bucharest, Rumania  
Budapest, Hungary

### Europe (Continued)

Copenhagen, Denmark  
Glasgow, Scotland  
Hamburg, Germany  
Istanbul, Turkey  
London, England  
Madrid, Spain  
Milan, Italy  
Naples, Italy  
Paris, France  
Rome, Italy  
Vienna, Austria

### North America

Baltimore, U.S.A.  
Boston, U.S.A.  
Buffalo, U.S.A.  
Chicago, U.S.A.  
Cleveland, U.S.A.  
Detroit, U.S.A.  
Los Angeles, U.S.A.  
Mexico City, Mexico  
Minneapolis-St. Paul, U.S.A.  
Montreal, Canada  
New York, U.S.A.  
Philadelphia, U.S.A.  
Pittsburgh, U.S.A.  
San Francisco, U.S.A.  
St. Louis, U.S.A.  
Toronto, Canada  
Washington, D.C., U.S.A.

### South America

Buenos Aires, Argentina  
Lima, Peru  
Rio de Janeiro, Brazil  
Sao Paulo, Brazil  
Santiago, Chile

\* Included in Asia

\*\* Included in Australasia

**Index**

**END PAGE**

## SOLAR &amp; COMETARY SERVICES

- | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|-----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91  | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91  | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91  | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91  | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |     |

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<p>AD- Quartermaster Research and Development Center, Natick, Mass. COLOR REGIONS OF THE WORLD, by Jack V. Chambers and Paul C. Dalrymple. November 1956, 56 p. (Technical Report EP-37)</p> <p>The present five Quartermaster standard colors (white, tan, green, olive green, and olive drab) approximate the natural colors of about 86 percent of the world land area. For nearly complete world coverage three additional basic colors would be required: earth red, earth brown, and forest green.</p> <p>Tan and green are the two principal color types in the world; tan has an average of 31 percent and green has an average of 27 percent of the total land area. White and partly white types average 18 percent of the total land area. Olive green averages 8 percent and olive drab 2 percent of the total land area. The three additional basic colors required for 100 percent coverage represent the following average percentages of total land area: earth red and earth brown, 6 percent each, and forest green 2 percent.</p> <p>The present five standard Quartermaster colors provide the following percentage of coloration coverage by continents: Africa 100 percent, Asia 74 percent, Australasia 83 percent, Europe 93 percent, North America 84 percent, and South America 91 percent. Africa and Australasia appear as predominantly tan continents, Europe and South America predominantly green, and Asia and North America have a variety of coloration with no single color dominant.</p>	<p>UNCLASSIFIED</p> <p>I. Terrain - Color II. Chambers, Jack V. III. Dalrymple, Paul C. IV. Title V. Series</p>	<p>AD- Quartermaster Research and Development Center, Natick, Mass. COLOR REGIONS OF THE WORLD, by Jack V. Chambers and Paul C. Dalrymple. November 1956, 56 p. (Technical Report EP-37)</p> <p>The present five Quartermaster standard colors (white, tan, green, olive green, and olive drab) approximate the natural colors of about 86 percent of the world land area. For nearly complete world coverage three additional basic colors would be required: earth red, earth brown, and forest green.</p> <p>Tan and green are the two principal color types in the world; tan has an average of 31 percent and green has an average of 27 percent of the total land area. White and partly white types average 18 percent of the total land area. Olive green averages 8 percent and olive drab 2 percent of the total land area. The three additional basic colors required for 100 percent coverage represent the following average percentages of total land area: earth red and earth brown, 6 percent each, and forest green 2 percent.</p> <p>The present five standard Quartermaster colors provide the following percentage of coloration coverage by continents: Africa 100 percent, Asia 74 percent, Australasia 83 percent, Europe 93 percent, North America 84 percent, and South America 91 percent. Africa and Australasia appear as predominantly tan continents, Europe and South America predominantly green, and Asia and North America have a variety of coloration with no single color dominant.</p>	<p>UNCLASSIFIED</p> <p>I. Terrain - Color II. Chambers, Jack V. III. Dalrymple, Paul C. IV. Title V. Series</p>
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